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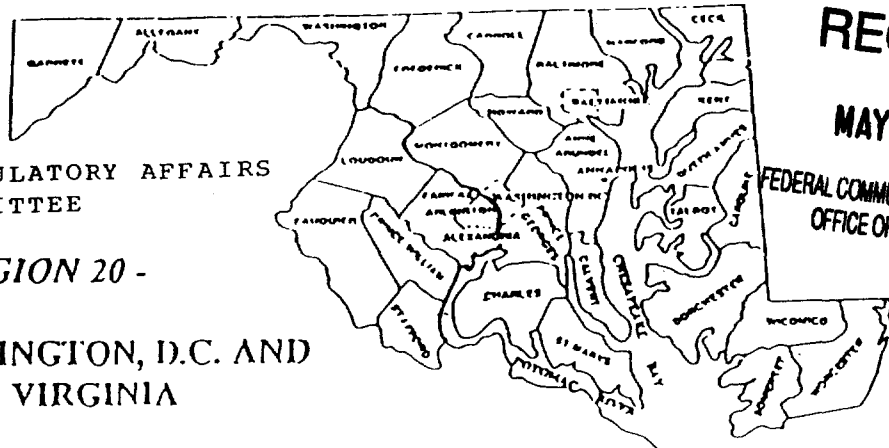
MAY 28 1993

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

LEGISLATIVE/REGULATORY AFFAIRS
COMMITTEE

- FOR REGION 20 -

MARYLAND, WASHINGTON, D.C. AND
NORTHERN VIRGINIA



Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of
Co-channel Protection
Criteria for Part 90,
Subpart S Stations
Operating above 800 MHz

PR Docket No. 93-60

RM-8028

COMMENTS

Submitted by:

Legislative Affairs Committee
Region-20 Public Safety Plan Review Committee
Dr. Michael C. Trahos, D.O., NCE, CET - Chairman
4600 King Street, Suite 5N/4E
Alexandria, Virginia 22302

May 28, 1993

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PR Docket No. 93-60

7-21-64, Defense Planning Committee was requested to address the future

5. The Appendix to these Comments is a detailed study of this harmful interference impact, as prepared by Mr. Frank Stoda, Staff Engineer, Radio Services Branch, Division of Communications, Fairfax County, Virginia Government. The paragraphs infra, are a summation of this study.

6. The following TABLE A were the base, mobile and portable parameters used:

TABLE A

STATION TYPE	ERP	TX ANT HGT (AGL)	ANTENNA TYPE	HGT OF RX ANT (AGL)	FREQUENCY
BASE	500W	190 FT.	10dB OMNI	9/6 FT.	854 MHZ
MOBILE	70W	9 FT.	3dB OMNI	190 FT.	809 MHZ
PORTABLE	3W	6 FT.	0dB OMNI	190 FT.	809 MHZ

7. The following TABLE B are the resultant base station average distance to field strength contours using the parameters in TABLE A supra:

TABLE B

STATION TYPE	40 dBu	22 dBu	18 dBu
BASE	10.14 MI	12.51 MI	14.02 MI
MOBILE	1.14 MI	1.43 MI	1.61 MI
PORTABLE	0.37 MI	0.47 MI	0.53 MI

8. The following TABLE C are the resultant average distance to field strength contours of an existing portable station located just inside and a short-spaced mobile station, on the edge of the short-spaced base station 22 dBu system contour, located just outside the 40 dBu contour of the existing base station, using the parameters in TABLE A supra:

TABLE C

STATION TYPE	CONTOURS		
	40 dBu	22 dBu	18 dBu
PORTABLE	9.43 MI	13.64 MI	14.53 MI
MOBILE	13.55 MI	16.30 MI	16.80 MI

9. The following TABLE D are the resultant microvolt (uv) and dBu signal intensity values, at that existing base station receiver, by the existing portable and short-spaced mobile stations as described in paragraph 8 supra, using the parameters in TABLE A supra:

TABLE D

STATION TYPE	SIGNAL INTENSITIES	
	uv	dBu
PORTABLE	1.24	28.63
MOBILE	9.49	46.31

10. In the Notice, the Commission stated that:

"Historically, we have not considered the effect of mobile units when determining protection criteria. All considerations have been limited to base-to-base interference because one cannot predict where a mobile unit will be at any time. Mobile units can travel beyond their own service area and into the service area of a

12. It is very likely that short-spaced high-power vehicular mobiles will operate out to, if not beyond, their base station's 22 dBu contour. Such a system short-spaced to a similar existing commercial operation may be tolerable. However, where the safety of life and property is of concern, such a commercial system short-spaced to an existing Public Safety system is unacceptable.

13. In General Docket 87-112, the Commission allocated the 821-824/866-869 MHz band for Public Safety use. As noted in paragraph 2 supra, the Commission adopted General Docket 90-7, the Public Safety Radio Communications Plan for Region-20.

14. The Region-20 Planning Committee, when formulating the Region-20 Plan, realized the importance of protecting existing base station receivers from co-channel system mobiles. The Region-20 Plan incorporated, and the Commission approved, a 40/5 dBu ratio base-to-base co-channel protection criteria.







15. There cannot, therefore, be one standardized protection criteria for all CFR Part 90, Subpart S, radio systems as proposed.^{5/} A minimum of two standardized protection criterias are needed, a conservative one for short-spacing upon existing co-channel Public Safety systems and another more liberal one for short-spacing upon existing non-public safety systems.

III.

CONCLUSION

16. The appended study shows that harmful interference will result to base station receivers from short-spaced mobile station operations based upon the proposed 40/22 dBu ratio base-to-base protection criteria. Existing Public Safety systems, being predominately hand-held portable in configuration, will not be able to tolerate such harmful interference with the potential result of placing human life in jeopardy.

17. The Commission has set the precedent, with the adoption of General Docket 90-7 and others, that a 40/5 dBu ratio base-to-base co-channel protection criteria is appropriate when short-spacing with an existing Public Safety system. The Commission should therefore extend this policy and implement, in the adopted Report and Order to this proceeding, a 40/5 dBu ratio ~~protection criteria when short spacing with an existing~~



IV.

FOOTNOTES

- 1/ REPORT AND ORDER, General Docket 87-112, FCC 87-359, Paragraph 4.
- 2/ WASHINGTON, D.C. METROPOLITAN AREA - REGION 20, General Docket 90-7, DA 90-28, January 17, 1990.
- 3/ NOTICE OF PROPOSED RULE MAKING, PR Docket 93-60, FCC 93-140, Paragraph 12 and Footnote 18.
- 4/ Ibid., Paragraph 16.
- 5/ Ibid., Paragraph 9.

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**APPENDICES FOR
COMMENTS TO
DOCKET NO. 93-60
SUBMITTED BY
LEGISLATIVE AFFAIRS COMMITTEE
REGION 20 PUBLIC SAFETY REVIEW COMMITTEE**

Technical Data Submitted by:

Frank Stoda, Engineer
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Division of Communications
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3613 Jermantown Road
Fairfax, Virginia 22030

May 28, 1993

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- A. EXHIBIT 1 - 150 DEGREE RADIAL FROM EXISTING BASE STATION FOR 30 MILES SHOWING STATION'S EFFECTIVE RADIATED POWER, IN DBU, AT 0.2 MILE INCREMENTS.
- B. EXHIBIT 2 - 330 DEGREE RADIAL FROM SHORT-SPACED MOBILE OUTSIDE EXISTING BASE STATION'S 40 DBU CONTOUR FOR 30 MILES SHOWING MOBILE'S EFFECTIVE RADIATED POWER, IN DBU, AT 0.2 MILE INCREMENTS.
- C. EXHIBIT 3 - 330 DEGREE RADIAL FROM EXISTING PORTABLE INSIDE EXISTING BASE STATION'S 40 DBU CONTOUR FOR 30 MILES SHOWING PORTABLE'S EFFECTIVE RADIATED POWER, IN DBU, AT 0.2 MILE INCREMENTS.

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(con.)

IV. APPENDIX C *

- A. EXHIBIT 1 - 72 RADIALS FROM EXISTING BASE STATION TO 18 DBU POINT SHOWING STATION'S EFFECTIVE RADIATED POWER, IN DBU, AT 0.2 MILE INCREMENTS.
- B. EXHIBIT 2 - 72 RADIALS FROM SHORT-SPACED MOBILE OUTSIDE EXISTING BASE STATION'S 40 DBU CONTOUR TO 18 DBU POINT SHOWING MOBILE'S EFFECTIVE RADIATED POWER, IN DBU, AT 0.2 MILE INCREMENTS.
- C. EXHIBIT 3 - 72 RADIALS FROM EXISTING PORTABLE INSIDE EXISTING BASE STATION'S 40 DBU CONTOUR TO 18 DBU POINT SHOWING PORTABLE'S EFFECTIVE RADIATED POWER, IN DBU, AT 0.2 MILE INCREMENTS.

NOTE: Because of its voluminous size, APPENDIX C will only be submitted in the original copy of this submission.

CRITERIA FOR SITE DATA USED

EXISTING BASE STATION:

Antenna Height: An antenna height of 200 ft (190 ft center of radiation) was chosen because of the tower lighting restriction of towers over 200 ft.

Effective Radiated Power: An effective Radiated Power (ERP) of 500 watts was selected using the criteria in FCC Rules 90.635 table 2 for stations in Suburban environments with an HAAT up to 500 ft.

Radial used to Existing Portable and Short-spaced Mobile:

Radial 150 was selected because the distance to the 40 dBu contour for the Existing Base Station was close to the average distance for the 40 dBu contour for the Existing Base Station.

SHORT-SPACED MOBILE STATION:

Antenna Height: An antenna height of 9 ft was used base on average height of commercial vehicles.

Effective Radiated Power: An ERP of 70 watts was used based on a 35 watt mobile and a 3 dB gain antenna.

CRITERIA FOR SITE DATA USED

Existing Portable:

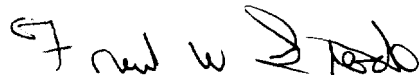
Antenna Height: An antenna height of 6 ft was used based on the average height of a person using a portable radio.

Effective Radiated Power: An ERP of 3 watts was used based on the highest rated power of most 800 MHz Portables in use in Fairfax County.

COMPUTER GENERATED DATA:

The Terrain Analysis Package Version 2.2a, Licensed for use By Fairfax County Government by SoftWright, was used for all data submitted in the appendices. The Bullington Obstruction Method was use for all data, using 3 second elevation data. Path loss was based on peak attenuation at inflection points and 1.333 earth curvature for all data.

Technical data respectfully submitted,



Frank W. Stoda, Engineer

APPENDIX A

EXISTING BASE STATION

EXHIBIT 1
PAGE 1

INTERPOLATED DISTANCE TO CONTOURS - BULLINGTON OBSTRUCTION METHOD
COMPUTED FIELD VALUES - BULLINGTON OBSTRUCTION METHOD

Transmitter Latitude: 38:55:13.0N
Longitude: 77:13:48.0W
Transmitter center of radiation: 700.0 ft MSL (190 ft AGL)
Frequency: 854.000 MHz
Power: 500.000 W
Non-directional antenna

Receiver antenna: 9.0 ft AGL

72 radials, from .20 mi to 30.00 mi in .20 mi steps.
Path loss based on peak attenuation at inflection points
and 1.333 earth curvature.

Azimuth (Deg T)	40.0 dBu (mi)
.00	4.00
5.00	16.57
10.00	17.18
15.00	22.69
20.00	14.18
25.00	13.65
30.00	18.76
35.00	11.79
40.00	4.39
45.00	14.38
50.00	4.89
55.00	10.26
60.00	5.56
65.00	5.56
70.00	10.17
75.00	10.31
80.00	6.00
85.00	6.15
90.00	6.49
95.00	6.87
100.00	6.90
105.00	7.05
110.00	9.12
115.00	9.99
120.00	20.38
125.00	7.66
130.00	10.78
135.00	10.66
140.00	8.10

EXISTING BASE STATION**EXHIBIT 1**
PAGE 2

Azimuth (Deg T)	40.0 dBu (mi)
145.00	9.33
150.00	12.31
155.00	7.58
160.00	8.64
165.00	12.96
170.00	11.96
175.00	13.38
180.00	13.55
185.00	9.93
190.00	8.97
195.00	12.79
200.00	12.67
205.00	12.40
210.00	11.80
215.00	10.14
220.00	10.38
225.00	13.28
230.00	11.75
235.00	11.16
240.00	11.44
245.00	11.99
250.00	12.47
255.00	11.39
260.00	26.73
265.00	25.02
270.00	24.67
275.00	23.28
280.00	10.48
285.00	11.88
290.00	23.92
295.00	12.74
300.00	12.59
305.00	21.86
310.00	9.76
315.00	21.49
320.00	11.17
325.00	11.28
330.00	11.05
335.00	12.72
340.00	15.10
345.00	14.54
350.00	14.58
355.00	15.64

AVERAGE: 12.41 Miles for 40 dBu Contour.

INTERPOLATED DISTANCE TO CONTOURS - BULLINGTON OBSTRUCTION METHOD
COMPUTED FIELD VALUES - BULLINGTON OBSTRUCTION METHOD

Transmitter Latitude: 38:55:13.0N
Longitude: 77:13:48.0W
Transmitter center of radiation: 700.0 ft MSL (190 ft AGL)
Frequency: 854.000 MHz
Power: 500.000 W
Non-directional antenna

Receiver antenna: 9.0 ft AGL

72 radials, from .20 mi to 30.00 mi in .20 mi steps.
Path loss based on peak attenuation at inflection points
and 1.333 earth curvature.

Azimuth (Deg T)	22.0 dBu (mi)
.00	23.77
5.00	19.75
10.00	23.36
15.00	24.06
20.00	24.16
25.00	23.64
30.00	20.55
35.00	20.46
40.00	21.15
45.00	20.44
50.00	4.93
55.00	10.37
60.00	14.35
65.00	16.05
70.00	14.28
75.00	12.98
80.00	9.61
85.00	9.76
90.00	9.25
95.00	27.91
100.00	8.57
105.00	8.64
110.00	9.36
115.00	25.72
120.00	23.65
125.00	22.20
130.00	11.51
135.00	10.76

EXISTING BASE STATION**EXHIBIT 1**
PAGE 4

Azimuth (Deg T)	22.0 dBu (mi)
140.00	15.38
145.00	13.37
155.00	9.36
160.00	12.32
165.00	13.98
170.00	13.09
175.00	14.51
180.00	14.71
185.00	15.79
190.00	15.40
195.00	13.49
200.00	12.87
205.00	12.56
210.00	12.33
215.00	13.67
220.00	10.59
225.00	13.64
230.00	14.11
235.00	12.53
240.00	13.26
245.00	12.59
250.00	15.43
255.00	12.19
260.00	26.82
265.00	25.79
270.00	25.69
275.00	25.30
280.00	26.74
285.00	20.96
290.00	24.78
295.00	25.66
300.00	25.93
305.00	27.46
310.00	27.45
315.00	27.29
320.00	29.27
325.00	11.39
330.00	22.70
335.00	22.80
340.00	23.59
345.00	23.13
350.00	23.46
355.00	15.80

AVERAGE: 17.51 Miles for 22 dBu Contour.

INTERPOLATED DISTANCE TO CONTOURS - BULLINGTON OBSTRUCTION METHOD
COMPUTED FIELD VALUES - BULLINGTON OBSTRUCTION METHOD

Transmitter Latitude: 38:55:13.0N
Longitude: 77:13:48.0W
Transmitter center of radiation: 700.0 ft MSL (190 ft AGL)
Frequency: 854.000 MHz
Power: 500.000 W
Non-directional antenna

Receiver antenna: 9.0 ft AGL

72 radials, from .20 mi to 30.00 mi in .20 mi steps.
Path loss based on peak attenuation at inflection points
and 1.333 earth curvature.

Azimuth (Deg T)	18.0 dBu (mi)
.00	24.37
5.00	21.17
10.00	23.37
15.00	24.41
20.00	24.29
25.00	23.66
30.00	22.56
35.00	20.49
40.00	23.71
45.00	20.47
50.00	4.94
55.00	10.40
60.00	14.37
65.00	16.09
70.00	14.33
75.00	13.08
80.00	12.80
85.00	9.78
90.00	9.32

EXISTING BASE STATION

EXHIBIT 1
PAGE 6

Azimuth (Deg T)	18.0 dBu (mi)
140.00	15.40
145.00	13.56
155.00	9.39
160.00	12.34
165.00	14.37
170.00	13.15
175.00	14.54
180.00	14.79
185.00	15.82
190.00	15.42
195.00	13.55
200.00	12.89
205.00	12.60
210.00	12.36
215.00	13.69
220.00	14.65
225.00	13.67

SHORT-SPACED MOBILE
OUTSIDE EXISTING BASE STATION'S
40 dBu CONTOUR

EXHIBIT 2
PAGE 1

SHORT-SPACED MOBILE
OUTSIDE EXISTING BASE STATION'S
40 dBu CONTOUR

EXHIBIT 2
PAGE 2

Azimuth (Deg T)	40.0 dBu (mi)
145.00	17.88
150.00	18.06
155.00	18.33
160.00	17.29
165.00	17.93
170.00	19.53
175.00	19.10
180.00	19.75
185.00	21.37
190.00	22.94
195.00	22.13
200.00	20.91
205.00	21.68
210.00	16.77
215.00	14.74
220.00	8.60
225.00	9.39
230.00	9.18
235.00	17.03
240.00	15.47
245.00	9.96
250.00	9.89
255.00	10.04
260.00	8.40
265.00	9.17
270.00	10.94
275.00	11.90
280.00	11.61
285.00	5.00
290.00	6.31
295.00	10.36
300.00	11.29
305.00	9.73
310.00	10.21
315.00	7.89
320.00	8.40
325.00	7.55
330.00	12.82
335.00	11.00
340.00	11.18
345.00	8.73
350.00	10.61
355.00	7.06

AVERAGE: 13.55 Miles for 40 dBu Contour.

SHORT-SPACED MOBILE
OUTSIDE EXISTING BASE STATION'S
40 dBu CONTOUR

EXHIBIT 2
PAGE 3

INTERPOLATED DISTANCE TO CONTOURS - BULLINGTON OBSTRUCTION METHOD
COMPUTED FIELD VALUES - BULLINGTON OBSTRUCTION METHOD

Transmitter Latitude: 38:45:50.0N